CHAPTER IX
CONCLUSION & RECOMMENDATION

IX.1. Conclusion

Based on the description in the previous chapters, here are the conclusions for this internship report.

1. Effluent Treatment Plant under PT. Riau Andalan Pulp & Paper (RAPP) has 2 treatment units, e.g., Effluent Treatment Plant for PT. RAPP and Effluent Treatment Plant for PT. Asia Pacific Rayon
2. PT. Asia Pacific Rayon is part of Asia Pacific Resource International Limited (APRIL) which is engaged in the production of viscose rayon;
3. PT. Asia Pacific Rayon wastewater effluent follows the government regulations, PERATURAN MENTERI LINGKUNGAN HIDUP REPUBLIK INDONESIA NOMOR 5 TAHUN 2014 TENTANG BAKU MUTU AIR LIMBAH.
4. Based on the mass balance calculation, it can be concluded that wastewater treatment performed by the Effluent Treatment Plant is an efficient and effective process.

IX.2. Recommendation

Following are the suggestions that the author gives to the Effluent Treatment Plant unit for APR wastewater

1. Based on the daily report given, the author suggests that the analysis of nutrient such as ammonia (NH_3), nitrite (NO_2^-), nitrate (NO_3^-), and phosphate (PO_4^{3-}) in the inlet of aeration basin are required to know the accurate amount of nutrient dosing needed.
2. Based on the author's visual analysis, it is necessary to do cleaning maintenance in the 1st reaction pool due to the formation of thick zinc-based scale that cause the volume of the reaction pool is greatly reduced.

REFERENCES

Biermann, C. J. (1996). Handbook of Pulping and Papermaking 2nd ed. Oregon: Academic Press.

Bratby, J. (2016). Coagulation and Flocculation in Water and Wastewater Treatment 3rd ed. London: IWA Publishing.

Fondriest Environmental. (2014, June 13). Fondriest Environmental, Inc. Retrieved from Fondriest Environmental Learning Center: https://www.fondriest.com/environmental-measurements/parameters/water-quality/turbidity-total-suspended-solids-water-clarity/

Herlambang, A. (1996). Teknologi Pengolahan Limbah Tekstil Dengan Sistem Lumpur Aktif. Bogor: Direktorat Teknologi Lingkungan .

Ismail, A. F., Khulbe, K. C., & Matsuura, T. (2019). Chapter 8 - RO Membrane Fouling. Reverse Osmosis, 189-220.

IWA Publishing. (2020, August 30). IWA Publishing the international water association. Retrieved from IWA Publishing the international water association: https://www.iwapublishing.com/news/industrial-wastewater-treatment

Kristijarti, A. P., Suharto, I., & Marieanna. (2013). Penentuan Jenis Koagulan dan Dosis Optimum untuk Meningkatkan Efisiensi Sedimentasi dalam Instalasi Pengolahan Air Limbah Pabrik Jamu X. Bandung: Parahyangan Catholic University Journal.

Merck. (2020, August 22). Merck. Retrieved from Merck: https://www.merckmillipore.com/ID/id/water-purification/learning-centers/applications/environment-water-analysis/cod/CLqb.qB.BIMAAAFAZwsQWTdi,nav?ReferrerURL=https%3A%2F%2Fwww.google.com%2F&bd=1

Rieger, L., Gillot, S., Langergraber, G., Ohtsuki, T., Shaw, A., Takacs, I., & Winkler, S. (2012). Guidelines for Using Activated Sludge Models. IWA Publishing.

Scholz, M. (2006). Chapter 18 - Activated sludge processes. Wetland Systems to Control Urban Runoff, 115-129.

USGS. (2020, August 23). USGS science for a changing world. Retrieved from USGS science for a changing world: https://www.usgs.gov/special-topic/water-science-school/science/biological-oxygen-demand-bod-and-water?qt-science_center_objects=0#qt-science_center_objects

Woodart & Curran, Inc. (2006). 5 - Waste Characterization. Industrial Waste Treatment Handbook (Second Edition), 83-126.